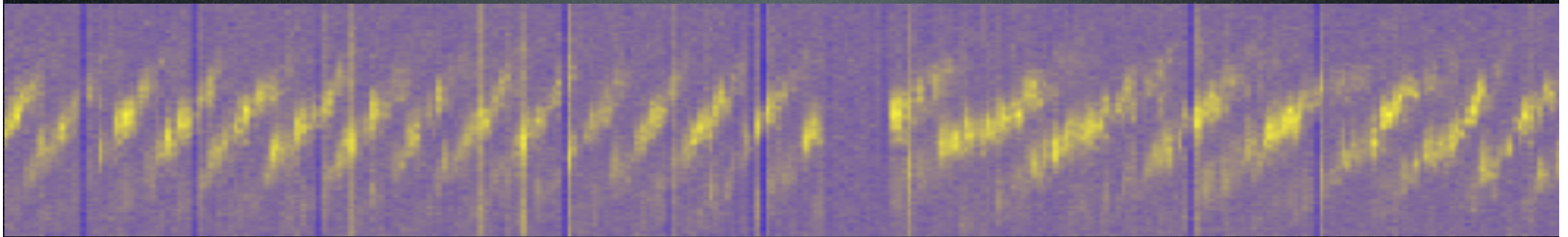


Pulsar Busy Week 6

Mid-Week Progress Report



Jason Hessels

on behalf of

LOFAR Pulsar Working Group (Asgekar, Alexov, Hassall,
Noutsos, Stappers, van Leeuwen, Kondratiev, ...)

ASTRON HPC Group (de Jong, Mol)



LOFAR Status Meeting
ASTRON - December 9th, 2009



Pulsar Busy Week 4: Goals

- LBA pulsar observations - Done (prior to PBW4)
- Effelsberg pulsar observations - Done (prior to PBW4)
- bf2h5 (HDF5 write) devel./tests - Done (prior to PBW4)
- Incoherent station summation - Done
- Simultaneous pulsar/imaging observations - Done/In Prog.
- Full Stokes pulsar observations - Done
- Simultaneous LBA/HBA observations
- Simultaneous Coh./Inc. observations - Done
- Multiple stations recorded separately - Done
- Fly's Eye observation
- Blank sky observation - Done
- All-weekend observation - Done
- 10-min. obs of 12+ pulsars
- Test various beam shapes - Done

Pulsar Busy Week 5: Goals

- Acquire data for PBW6 (Dec. 7-11th), when Stappers, Hassall, Zarka, Noutsos, and others will visit. - Done
- Take raw station data from multiple stations to try forming a calibrated tied-array beam offline - Done
- Tied-array observation of Jupiter - Done
- Raw data with TBB dumps
- Simultaneous LBA/HBA observations
- Simultaneous beam-formed and imaging obs
- Fly's Eye observation
- Blank sky observation
- 10-min. obs of 12+ pulsars - in progress

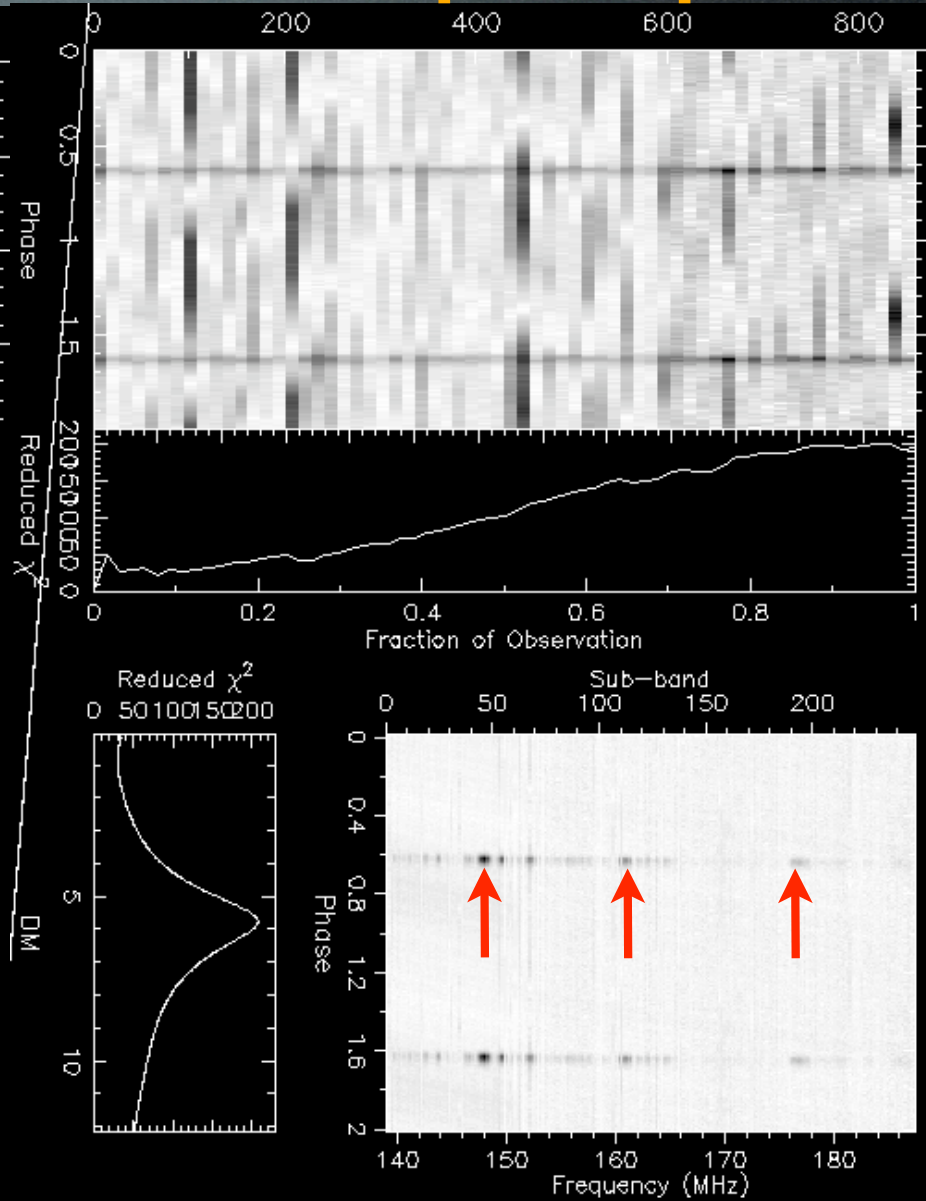
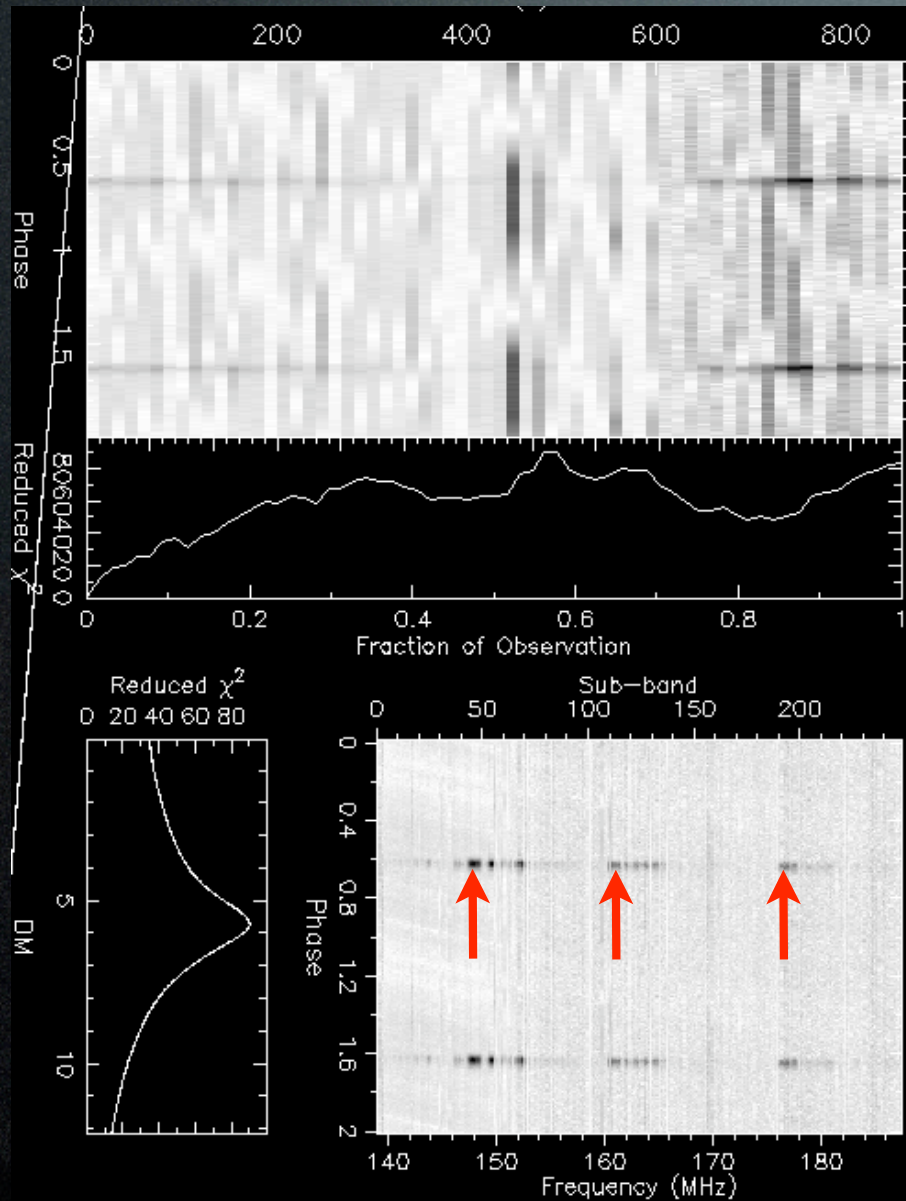
Pulsar Busy Week 6: Goals

- Take raw station data from multiple stations to try forming a calibrated tied-array beam offline - today/tomorrow
- Simultaneous tied-array/incoherent observation with the Superterp - by the end of the week?
- Raw data with TBB dumps
- Simultaneous LBA/HBA observations - Friday, with Jodrell and Effelsberg single dishes!
- Simultaneous beam-formed and imaging obs - today/tomorrow of CasA
- Fly's Eye observation
- Blank sky observation
- 10-min. obs of 12+ pulsars - in progress

Coherent vs. Incoherent Addition (from PBW4)

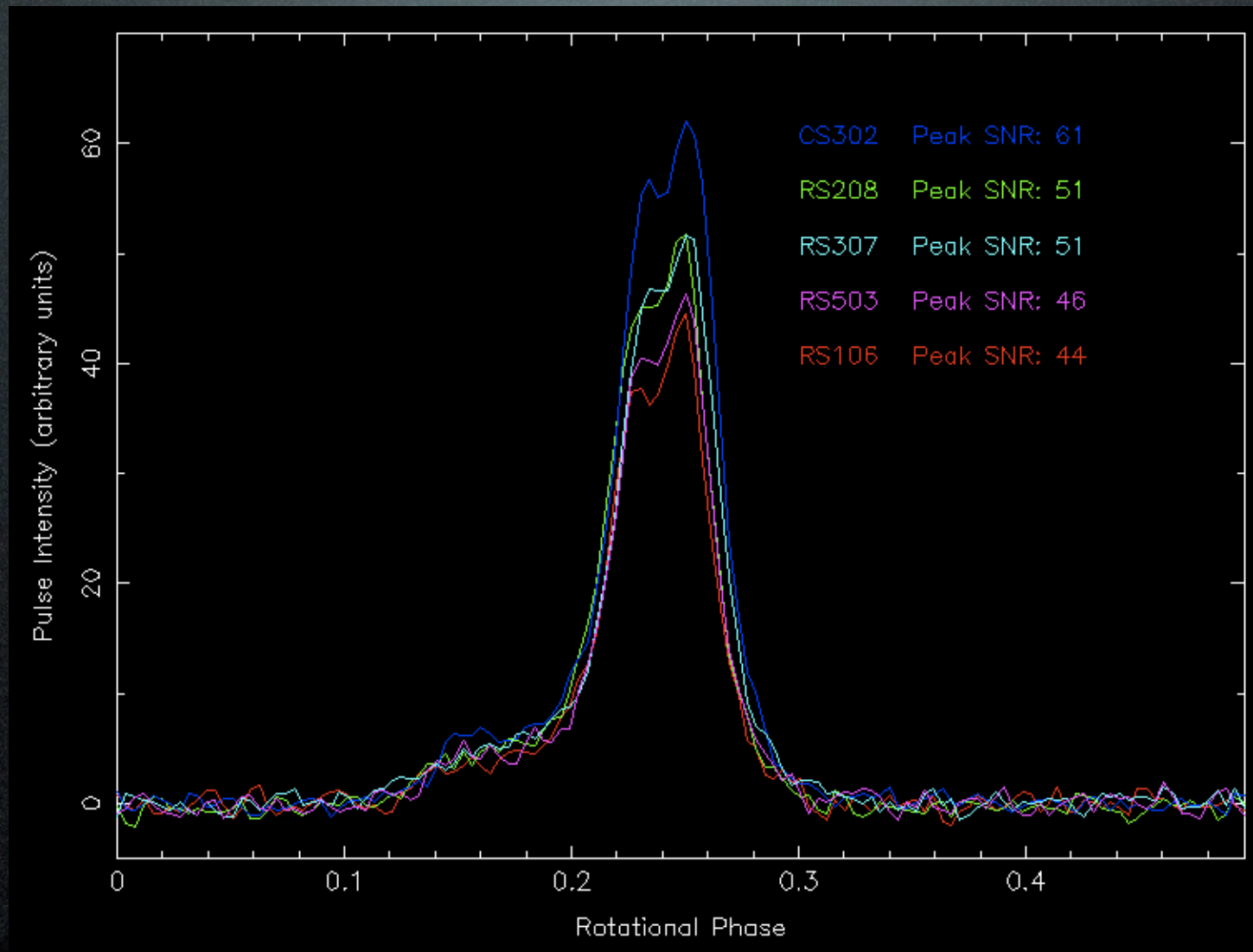
Redo this test with whole Superterp!

Uncalibrated Coherent Addition

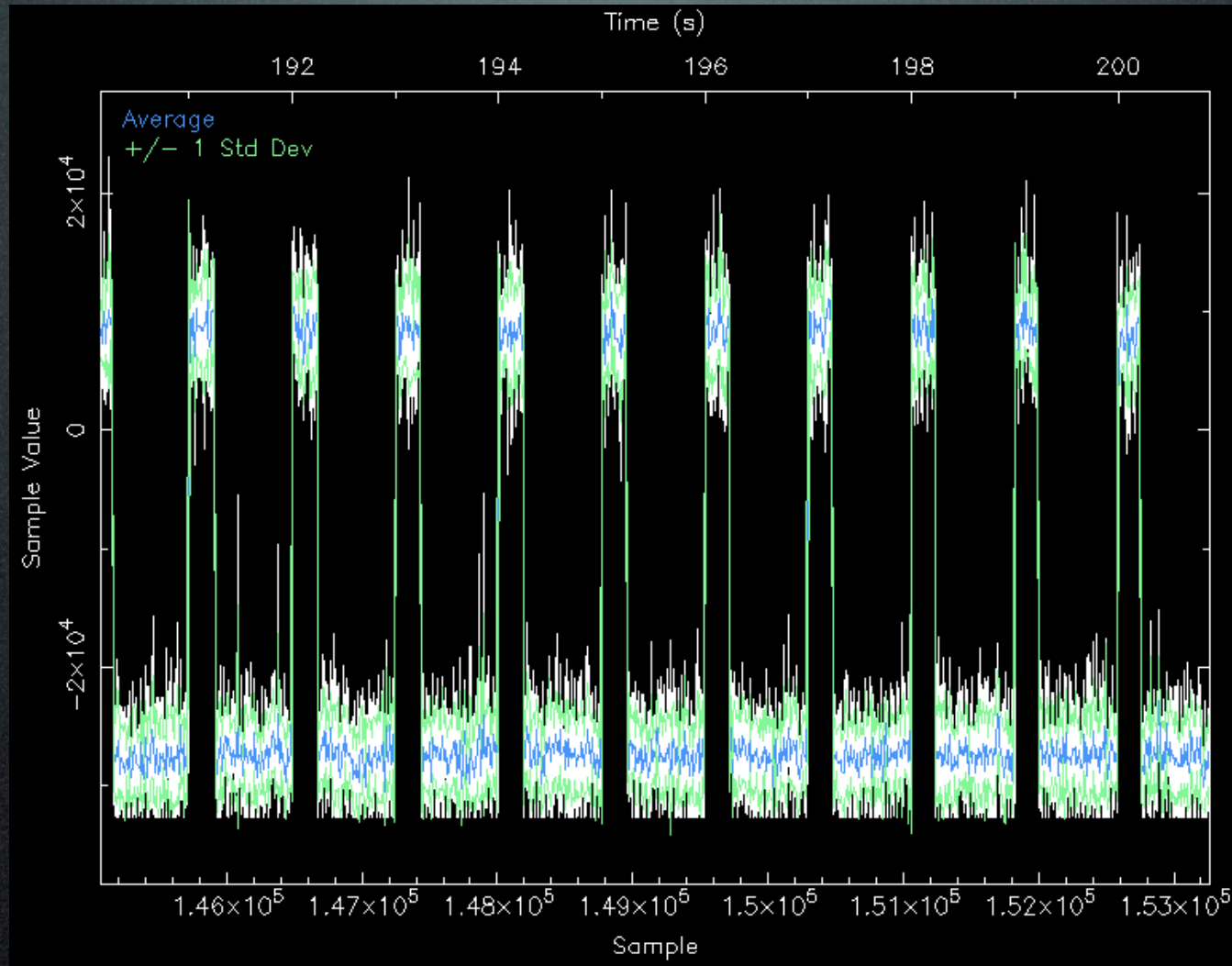


Uncalibrated Incoherent Addition

Redo this observation once HBA station calibration is implemented



Issue with periodic jumps in PBW5 data!

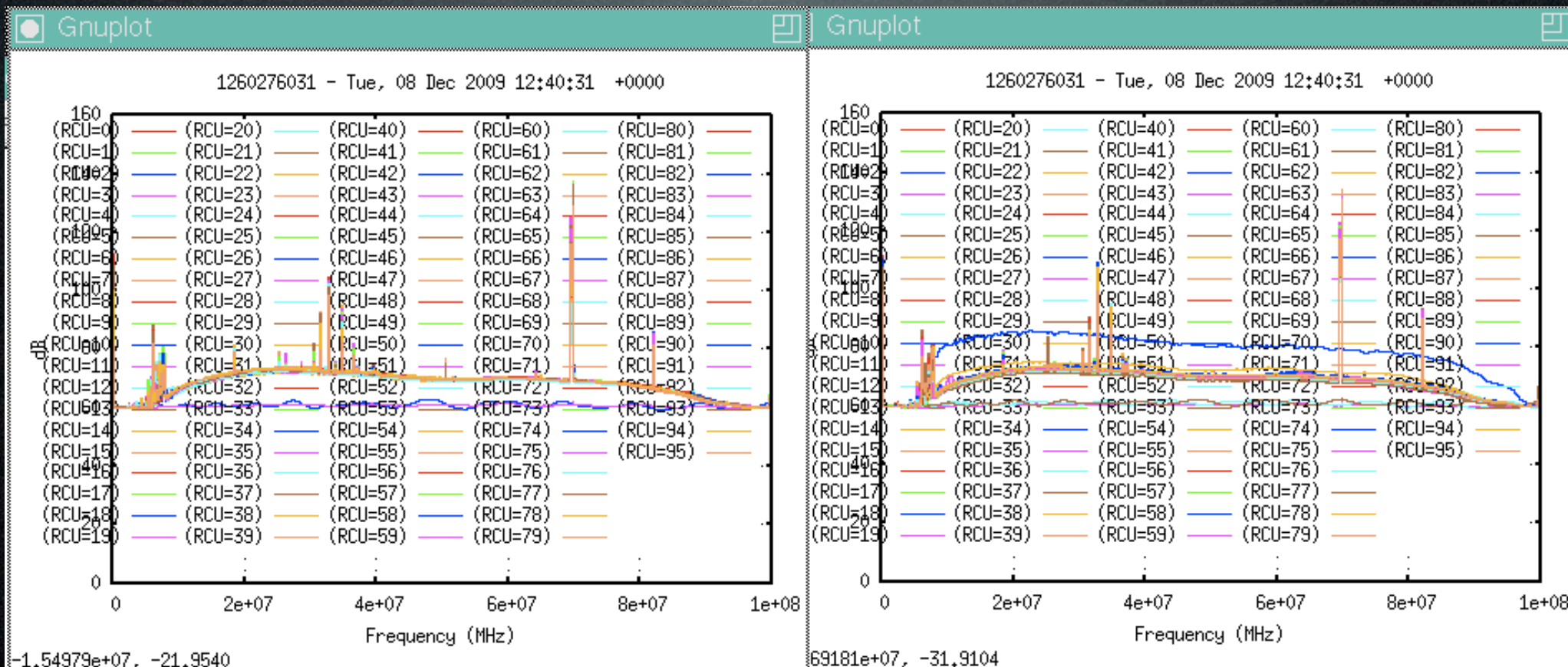


Still need to debug these periodic jumps in the data, first seen in PBW5 (see LSM 091125).

We *may* have tracked down the problem to CS030...
or just solved another issue.

CS302

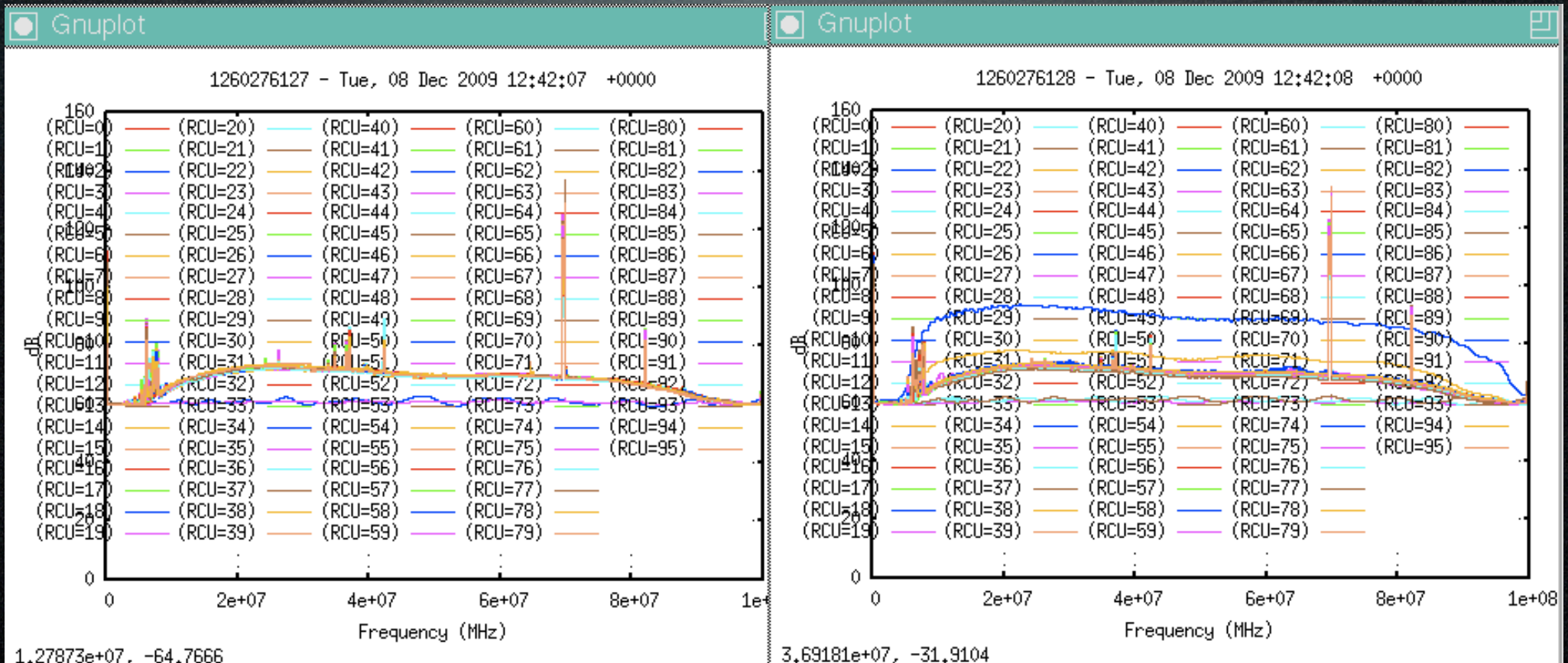
CS030



Problems with just one antenna (RCU 78 in this case)
can cause big problems for incoherently summed
observations.

CS302

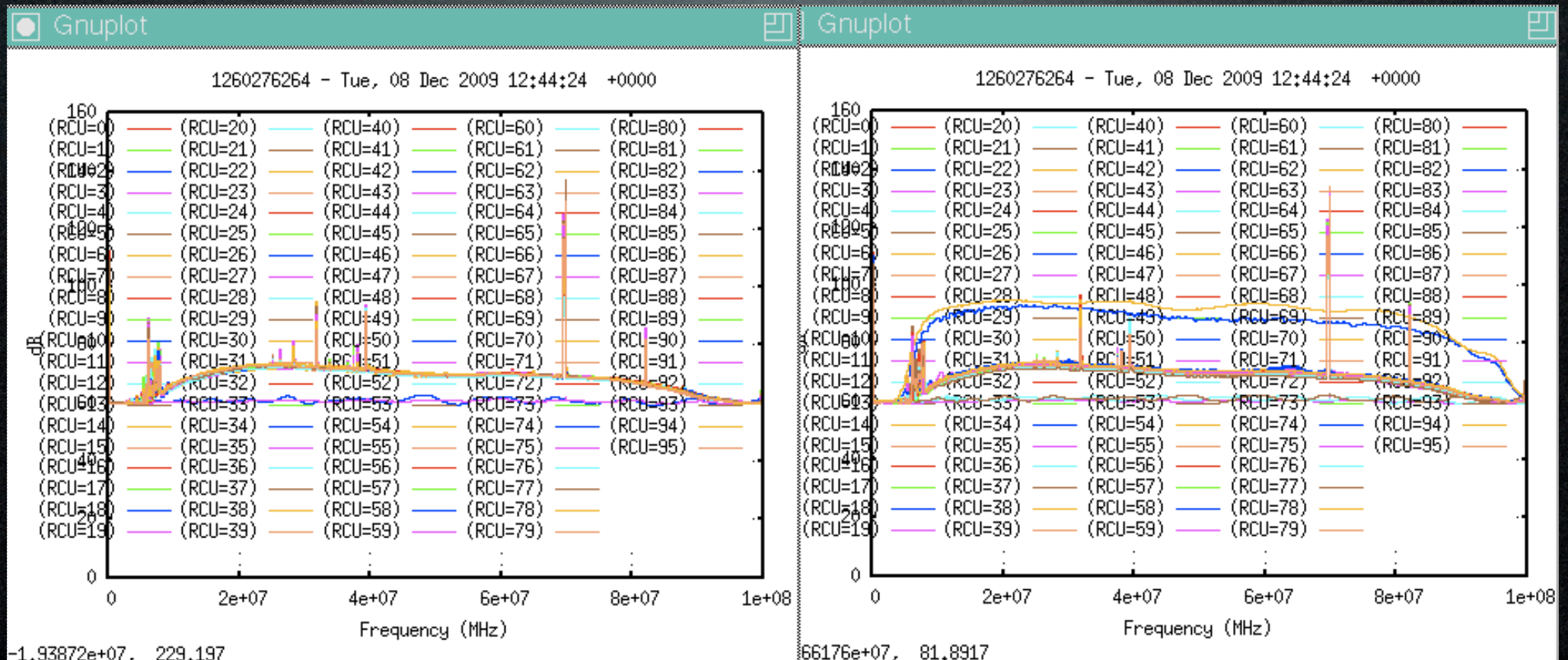
CS030



Occasionally another RCU also acts up as well...

CS302

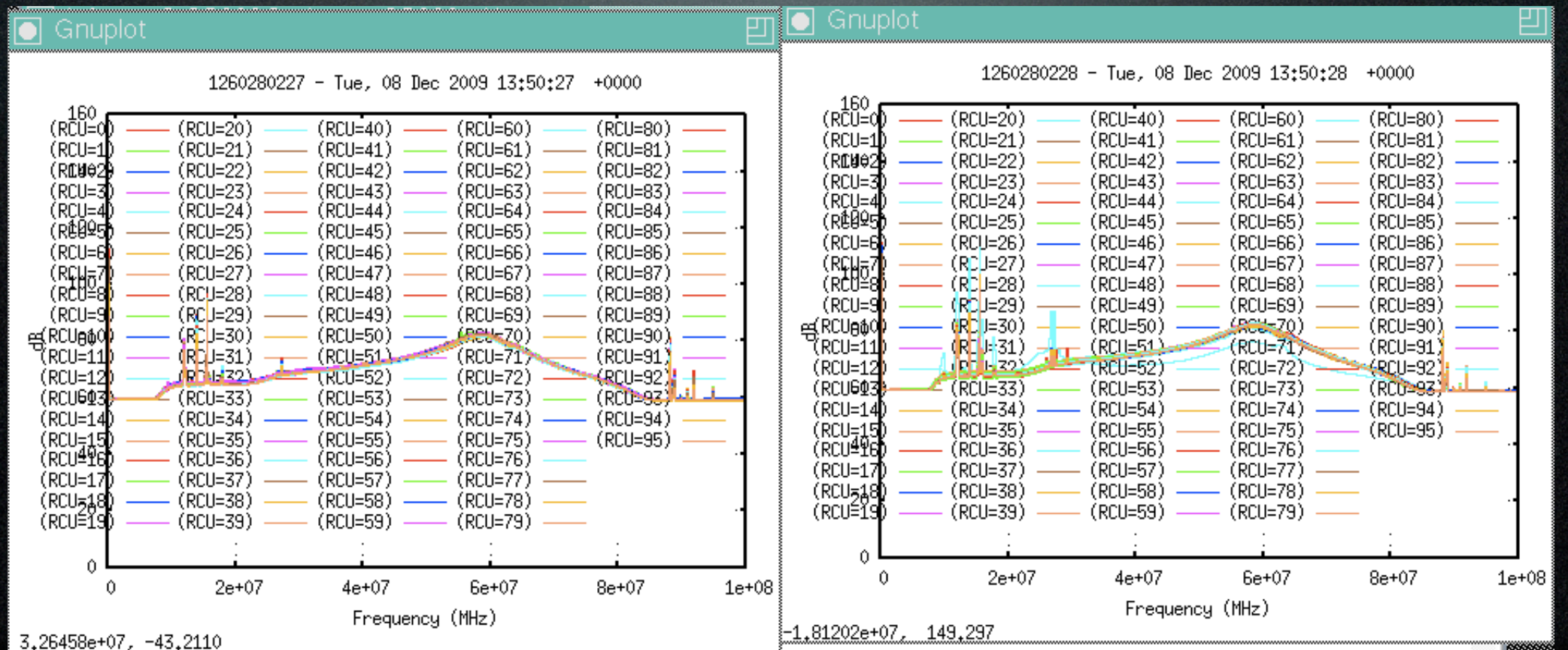
CS030



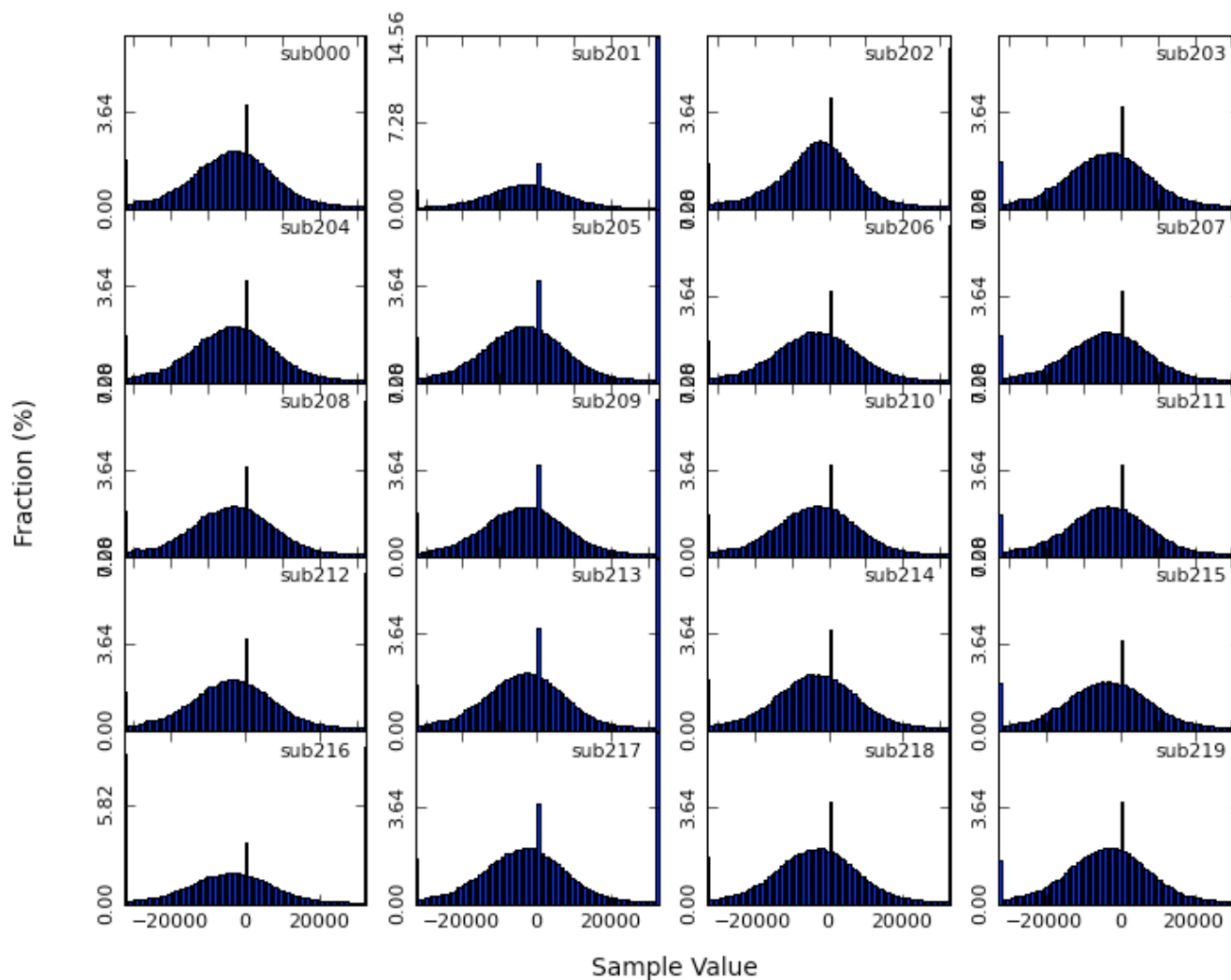
Problem may not be present in the LBAs...

CS302

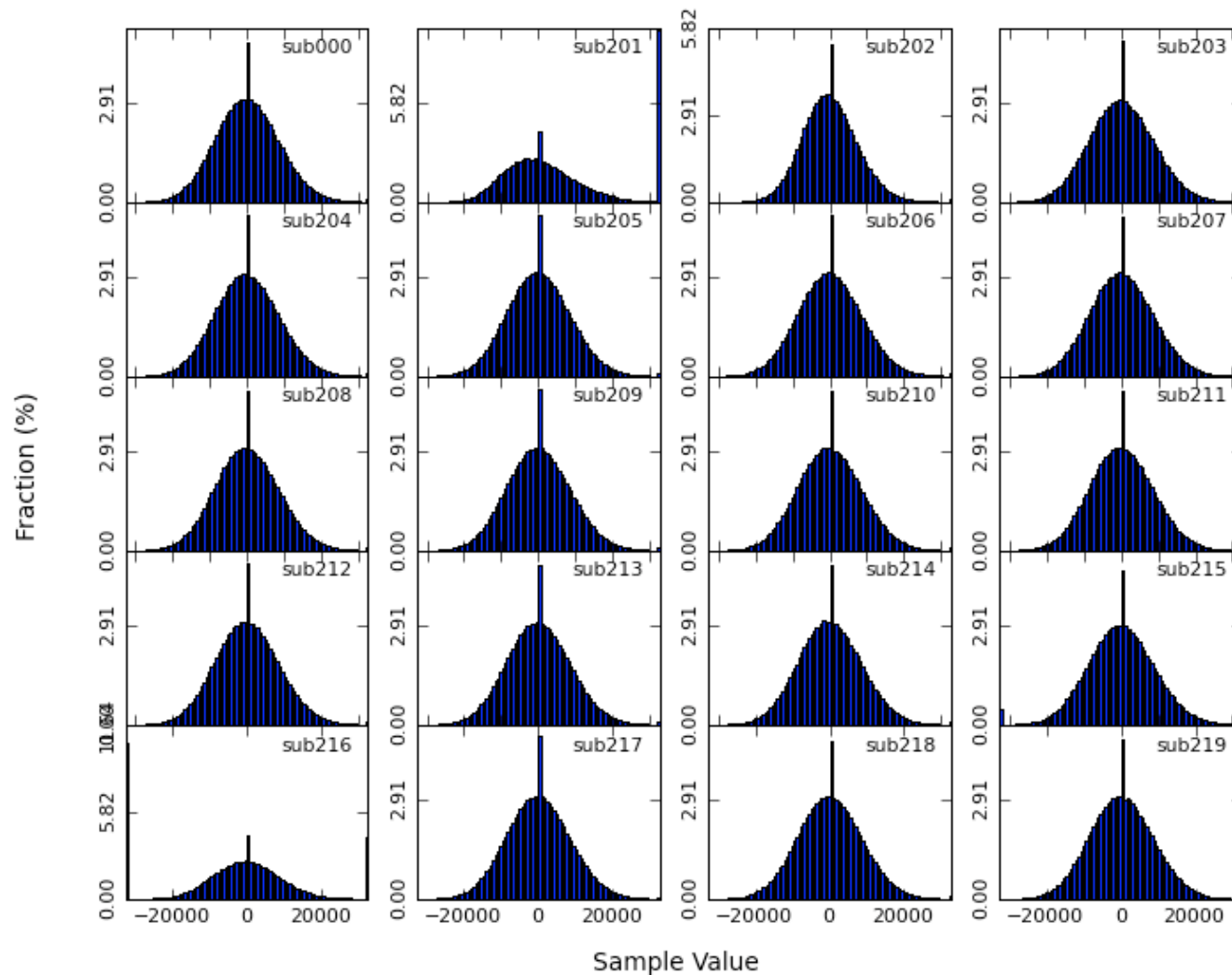
CS030



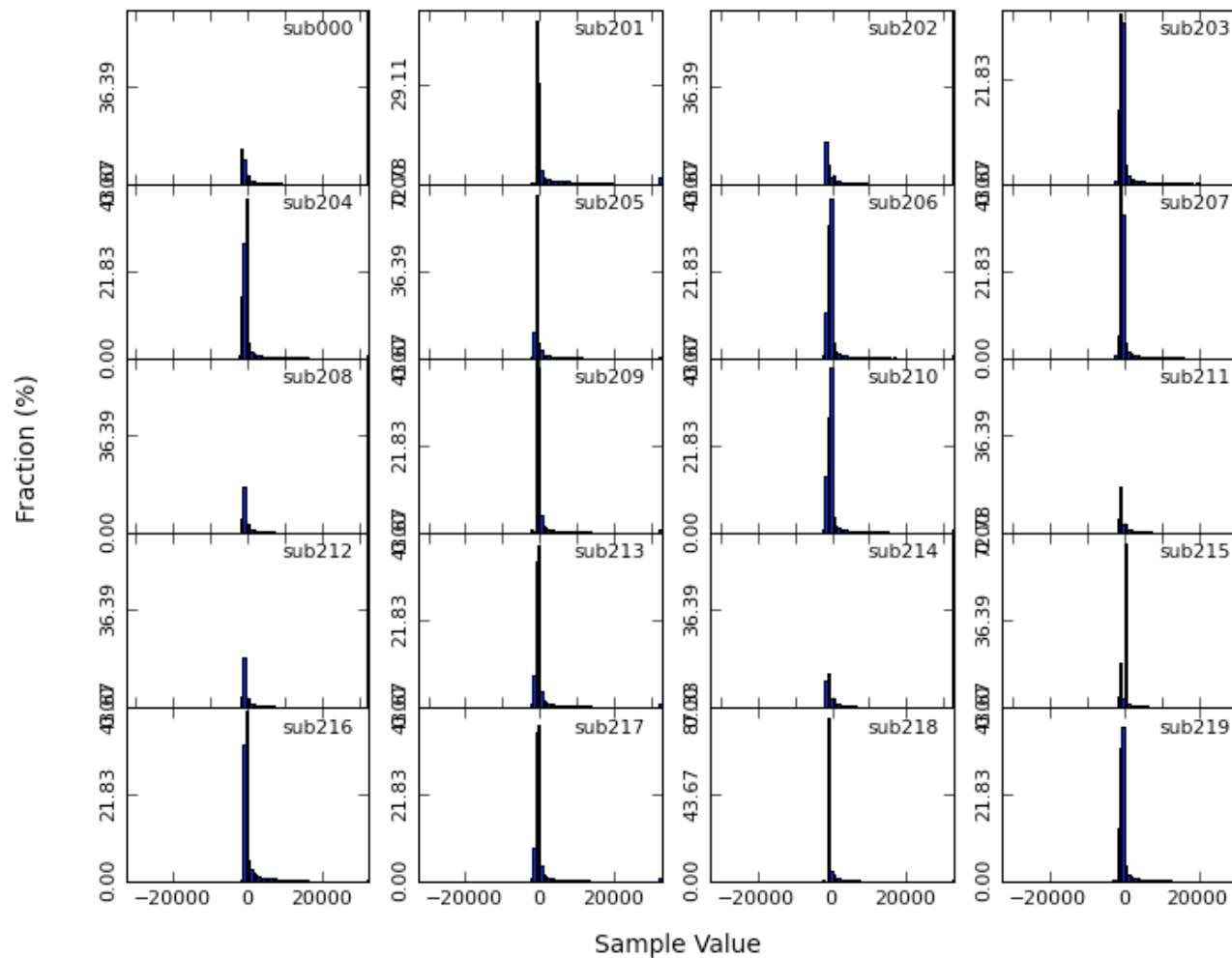
Histogram of Stokes I (CS030)



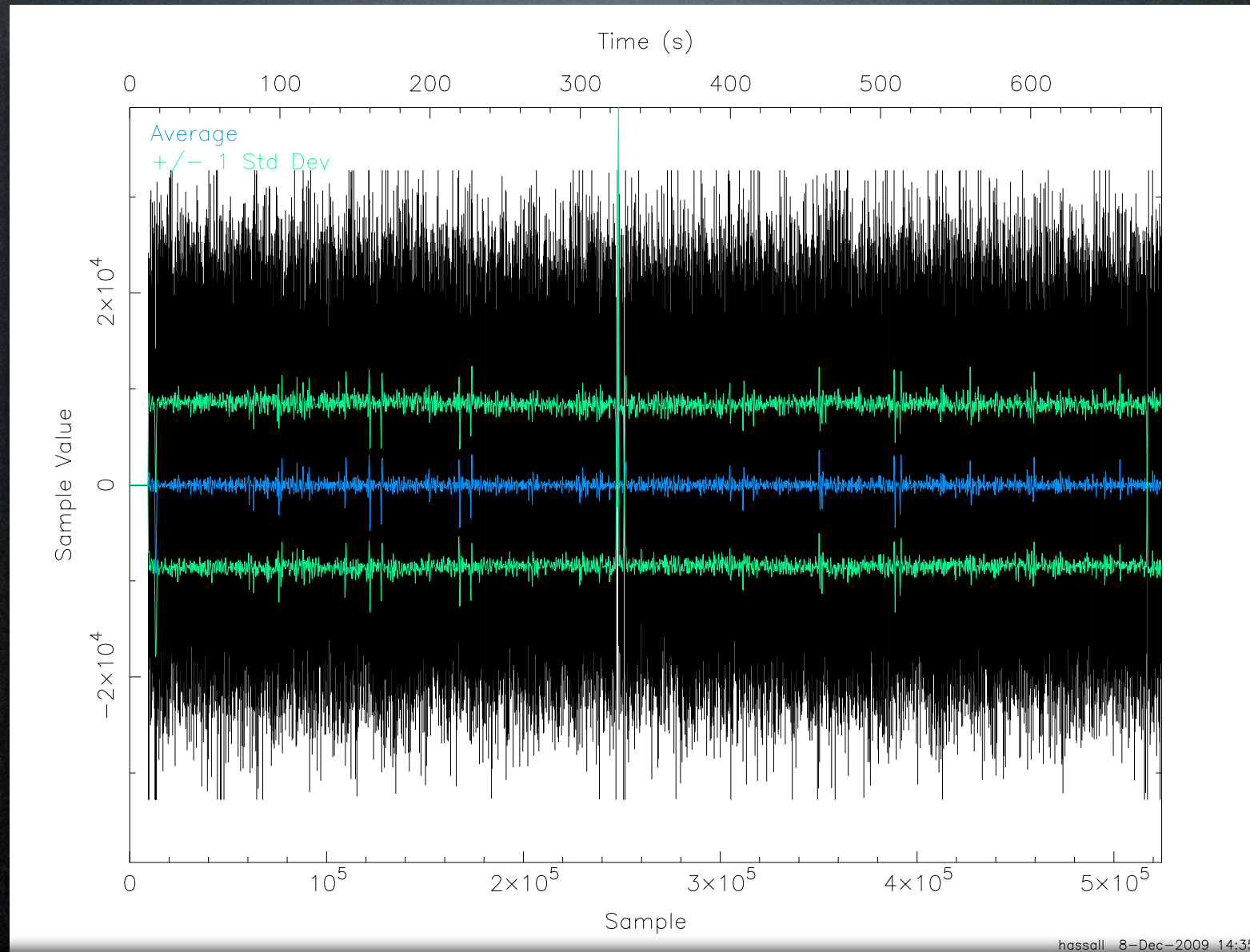
Histogram of Stokes I (CS302)



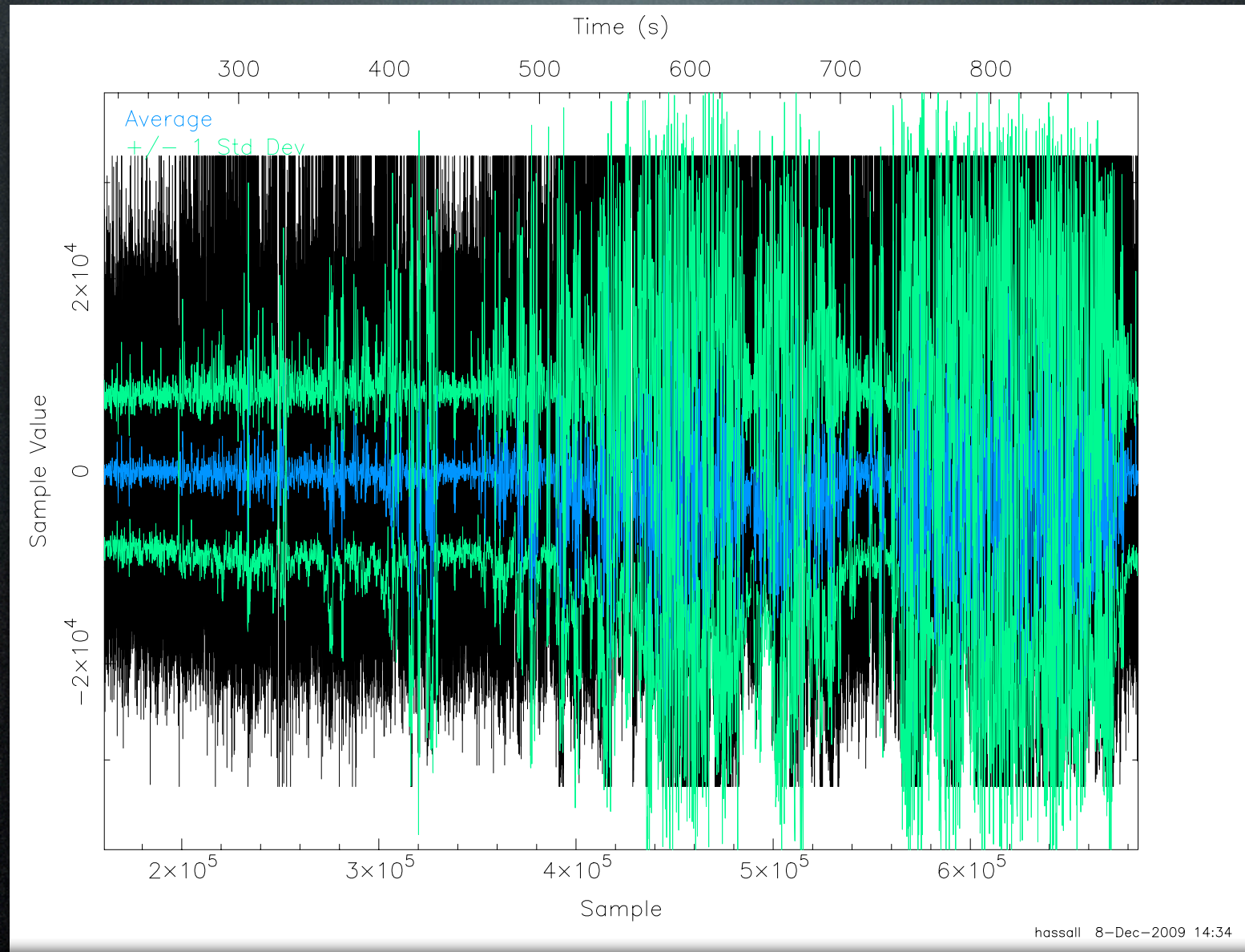
Histogram of Stokes I (CS030+CS302)



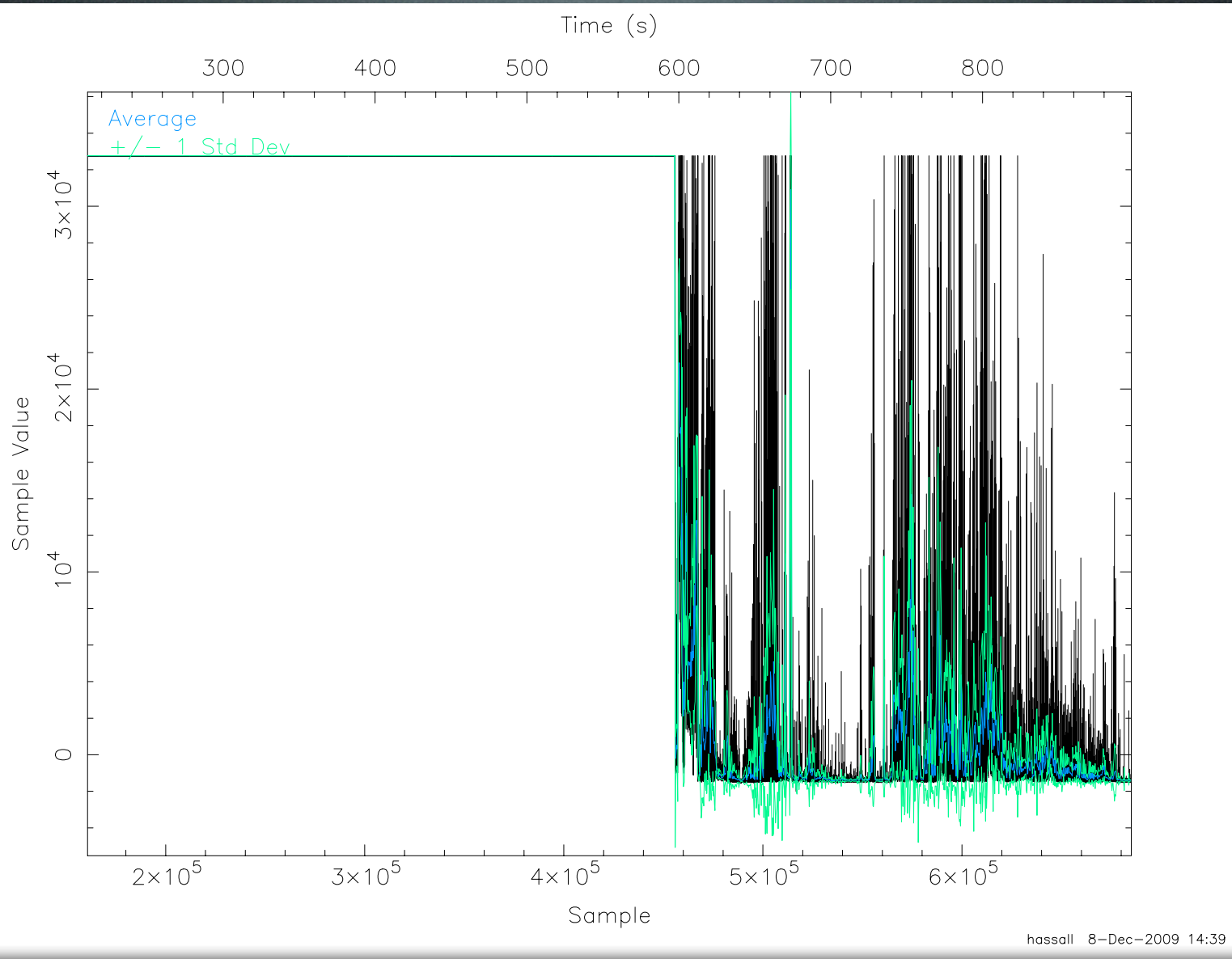
Time series, one subband (CS302)



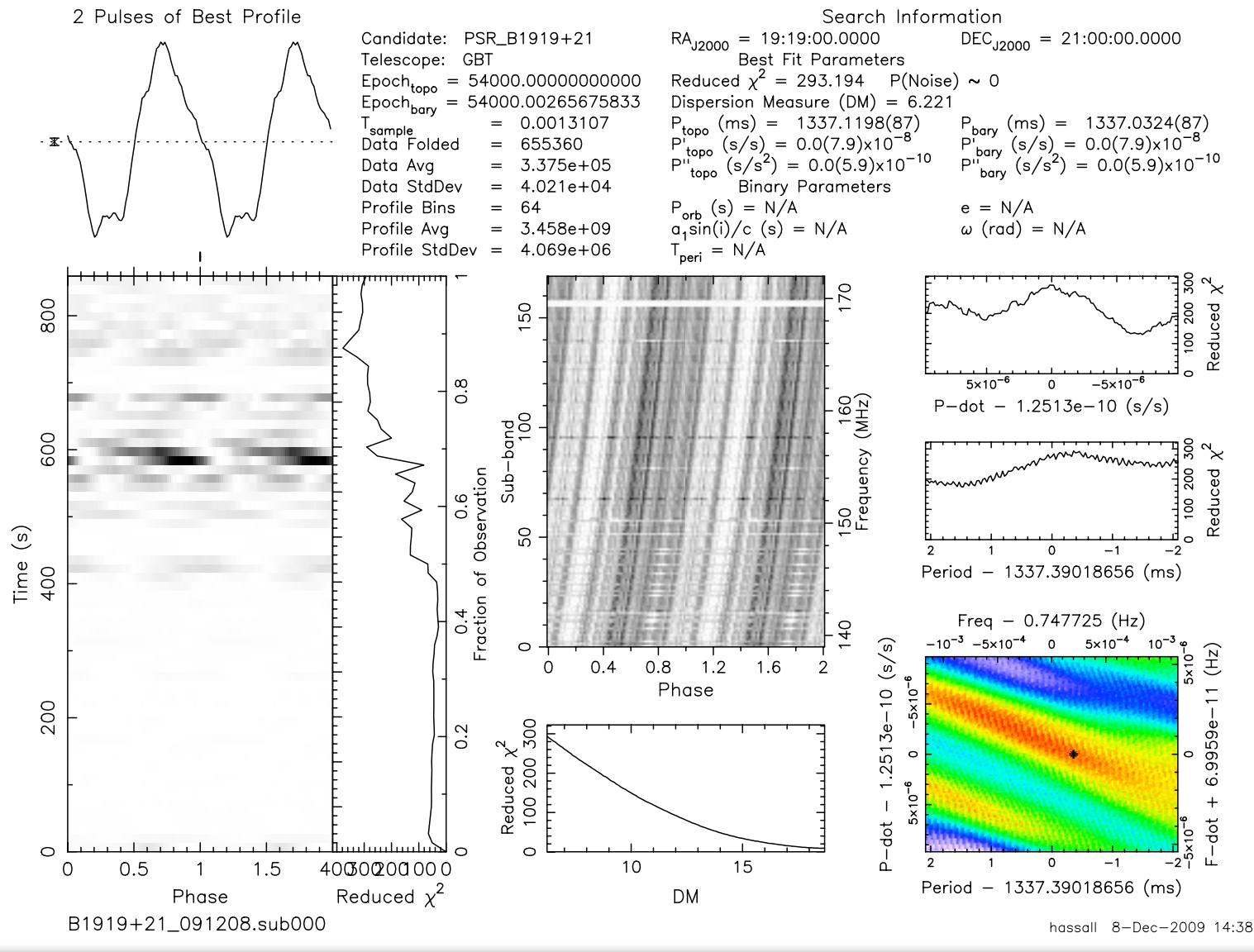
Time series, one subband (CS030+CS302)



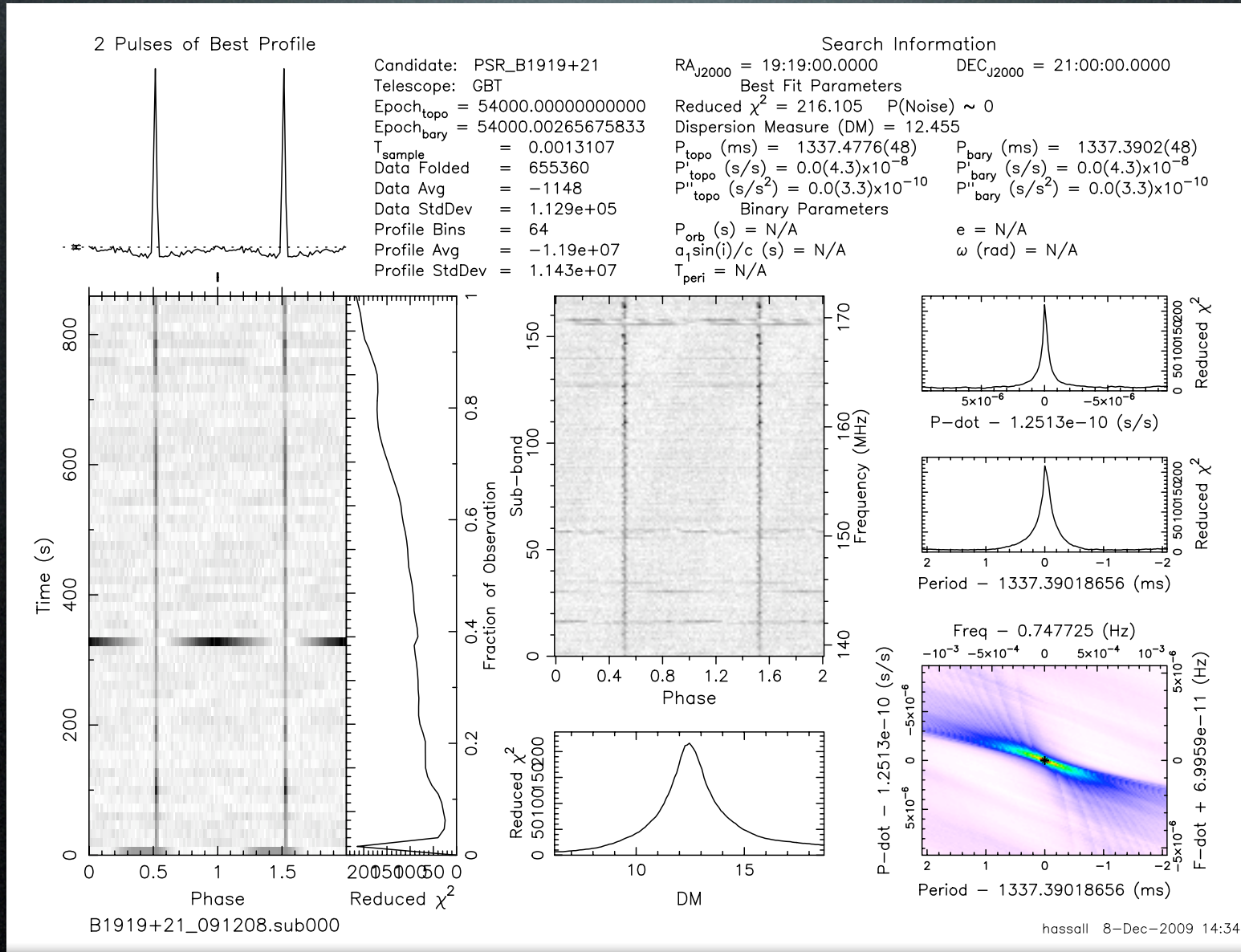
Time series, one subband (CS030)



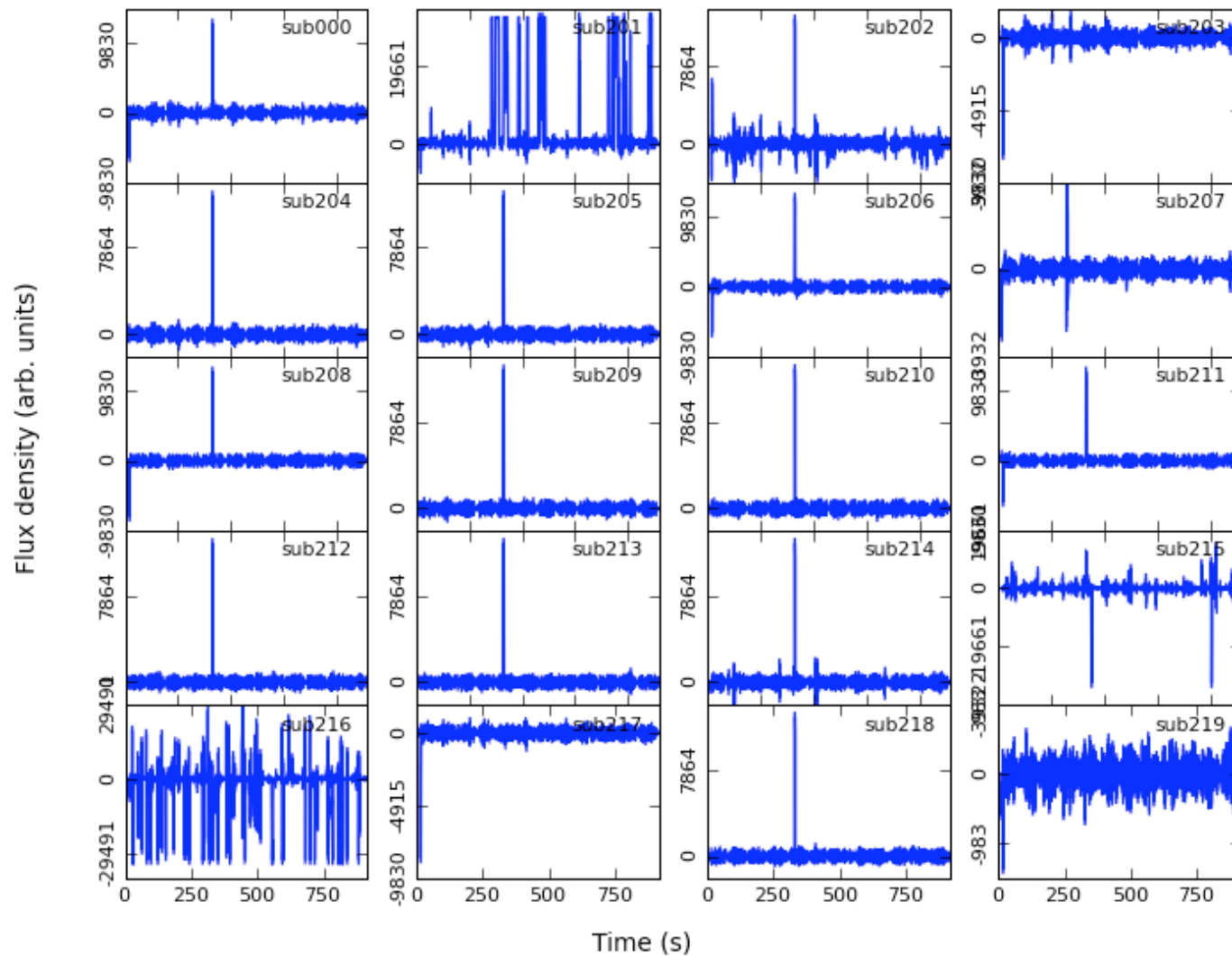
Folded data (CS030+CS302)



Folded data (CS302)



Individual Subbands



Summary

- PBW6 in progress.
- We hope to take a lot of data in the next few days to help develop the tied-array calibration.
- Simultaneous observations planned for Friday with the Jodrell and Effelsberg single dishes.